

MATERIALS: NEW, UNLESS OTHERWISE SPECIFIED, SHALL BE OF THE BEST QUALITY AVAILABLE. ALL MATERIALS SHALL BE SUBJECT TO INSPECTION AND TESTING BY THE ENGINEER. BASIS OF QUALITY SHALL BE LATEST STANDARDS OF ASTM, AIA, FEDERAL SPECIFICATIONS, OR OTHER ACCEPTABLE STANDARDS.

THE CONTRACTOR SHALL PAY ALL FEES, GIVE ALL NOTICES, FILE ALL NECESSARY PERMITS AND OBTAIN ALL PERMITS AND CERTIFICATES OF APPROVAL REQUIRED IN CONNECTION WITH ALL WORK UNDER THIS CONTRACT. HE SHALL COMPLY WITH ALL ORDINANCES, ORDINANCES, RULES AND REGULATIONS AND WITH THE NATIONAL ELECTRICAL CODES.

THE DRAWINGS ARE DIAGNOSTIC AND INDICATE GENERAL ARRANGEMENT OF WORK.

CONTRACTOR SHALL BE HELD TO HAVE EXAMINED THE SITE FOR HIS WORK BEFORE SUBMITTING HIS PROPOSAL. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR CONDITIONS FOUND DURING THE COURSE OF THE CONTRACT.

CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AT SITE AND BE RESPONSIBLE FOR THE ACCURACY OF SAME.

THE CONTRACTOR SHALL EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED IN SECTIONS FOR MOVING THROUGH THE SPACES.

CONTRACTOR SHALL CO-ORDINATE HIS WORK WITH REFLECTED CEILING PLANS AND OTHER PLANS.

THE WORK SHALL BE IN SUCH A MANNER SO AS TO BE READILY ACCESSIBLE FOR MAINTENANCE AND REPAIRS.

THE CONTRACTOR SHALL BE MADE TO MINIMIZE VIBRATION AND NOISE THROUGH CAREFUL CONSTRUCTION AND ERECTION.

STORE MATERIALS IN SPACES SO DESIGNATED BY ARCHITECT OWNER.

REMOVE RUBBISH FROM PREMISES AS OFTEN AS NECESSARY OR AS DIRECTED.

ALL LIFTING AND PATCHING IN CONNECTION WITH TRADE SHALL BE DONE BY THE CONTRACTOR.

EQUIPMENT INTENDED FOR PERMANENT INSTALLATION SHALL NOT BE OPERATED FOR TEMPORARY PURPOSES.

FURNISH FOR EACH MOTOR, AN APPROVED STARTER WITH REQUIRED OVERLOADS AND CONTACTS FOR MOUNTING AND WIRING BY ELECTRICAL CONTRACTOR.

ALL EQUIPMENT TO BE STARTED-UP AND CHECKED-OUT BY CONTRACTOR WITH ASSISTANCE FROM MANUFACTURER'S PERSONNEL.

ALL WORK AND EQUIPMENT TO BE FULLY GUARANTEED FOR ONE (1) YEAR FROM THE DATE OF FINAL PAYMENT AND ACCEPTANCE.

ALL WORK AND EQUIPMENT SHALL BE CLEAN TO THE SATISFACTION OF THE OWNER BEFORE TURNING SAME OVER TO THE OWNER.

SHOP DRAWINGS FOR EQUIPMENT SELECTION SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL PRIOR TO ORDERING, FABRICATION AND/OR INSTALLATION OF SAME. FOUR COPIES OF EACH SUBMITTAL FOR EQUIPMENT ARE REQUIRED: ONE (1) SET FOR ARCHITECT, ONE (1) SET FOR ENGINEER, ONE (1) SET FOR MANUFACTURER, AND ONE (1) SET FOR CONTRACTOR.

PROVIDE SERVICE AND OPERATING MANUAL; INCLUDE EQUIPMENT CUTS, WIRING AND CONTROL DIAGRAM, START UP AND SHUTDOWN INSTRUCTION, MAINTENANCE INSTRUCTIONS, AND PARTS LIST, ALL IN TRIPPLICATE.

CONNECT NEW WORK TO EXISTING IN A NEAT AND APPROVED MANNER. RESTORE EXISTING WORK IN MAKING SUCH CONNECTION TO PERFECT CONDITION.

INTERUPTION OF HEATING, POWER AND AUXILIARY SYSTEMS SHALL BE COORDINATED WITH THE BUILDING AUTHORITIES AND SUCH OUTAGES SHALL OCCUR DURING PREARRANGED ACCEPTABLE TIMES. THE EXISTING BUILDING SHALL NOT BE LEFT WITHOUT USE OF HEAT, LIGHTING, POWER, ETC., EXCEPT FOR FINAL CONNECTIONS, WHICH SHALL BE PERFORMED AT A TIME CONVENIENT TO THE BUILDING AUTHORITIES AND WITH NO ADDITIONAL EXPENSE TO THE LANDLORD.

ALL WORK IN OCCUPIED TENANT AREAS SHALL BE PERFORMED ON OTHER THAN NORMAL WORKING HOURS AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN SHUTDOWN OF EXISTING SYSTEMS BECOMES NECESSARY. SHUTDOWN TIME SHALL BE KEPT TO A MINIMUM.

CODES, LAWS AND ORDINANCES

ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE LATEST EDITIONS OF THE NATIONAL BOARD OF FIRE UNDERWRITERS, NFPA, THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, LAWS AND ORDINANCES.

RECORD DRAWINGS

THE CONTRACTOR SHALL, DURING THE PROGRESS OF THE WORK, KEEP A CAREFUL RECORD OF ALL CHANGES MADE TO THE ACTUAL INSTALLATION DIFFERS FROM THAT SHOWN ON THE CONTRACT DRAWINGS. AT THE CONCLUSION THEREOF, HE SHALL PREPARE A SET OF RECORD-REPRODUCIBLE DRAWINGS INDICATING THE "AS-BUILT" MANNER OF INSTALLATION WHICH SHALL BE TURNED OVER TO THE OWNER.

DUCTWORK IN COMPLETE CONFORMANCE WITH RECOMMENDED CONSTRUCTION FOR RECTANGULAR SHEET METAL DUCTS, (LATEST ASHRAE GUIDE) AND ALL OTHER AUTHORITIES HAVING JURISDICTION.

DUCTWORK SHALL BE TESTED, BALANCED AND SEALED TO AN ALLOWABLE LEAKAGE OF 10%.

STRAP HANGERS SHALL NOT BE LESS THAN 1" X 1/8" THICK AND ATTACHED TO SIDE OF DUCT WITH SHEETMETAL SCREWS. (SEE "DUCT HANGER DETAIL").

FLEXIBLE DUCT CONNECTIONS SHALL BE NEOPRENE OR GLASS CLOTH. UNCLAMPED SECTION SHALL BE 6" IN LENGTH.

ALL ACCESS DOORS SHALL BE AS PER LATEST SMACNA STANDARDS.

SUPPLY DIFFUSERS, REGISTERS AND GRILLS (TYPICALLY STANDARD). UNITS SHALL BE FURNISHED WITH BAKED ENAMEL FINISH: COLOR AND FINISH AS SELECTED BY ARCHITECT/OWNER.

SQUARE DIFFUSERS SHALL BE STEEL MODEL TDC WITH OPPOSED BLADE DAMPER AND EQUALIZING GRID.

SUPPLY REGISTERS SHALL BE ALUMINIUM MODEL 272-FL5.

RETURN/EXHAUST REGISTERS SHALL BE STEEL MODEL 25-RL5.

PAINTING: INSIDE DUCTWORK WHERE VISIBLE THROUGH OUTLET SHALL BE PAINTED BLACK.

TEST AND BALANCE AIR QUANTITIES AT ALL FANS AND AIR OUTLETS BY ANEMOMETER, ANEMOTERM, VELOMETER, OR PITOT TUBE AND DRAFT GAGE, WHICHEVER IS APPLICABLE. AIR QUANTITIES AT AIR OUTLETS SHALL BE WITHIN 10% OF THOSE SPECIFIED.

TEST LOG

SUBMIT FOUR (4) COPIES OF A COMPLETE, TABULATED LOG OF ALL TEST READINGS INCLUDING PRESSURES, TEMPERATURES, VELOCITIES, AIR AND WATER QUANTITIES, RPM, AND ELECTRIC MOTOR VOLTAGE AND CURRENT TO ARCHITECT FOR APPROVAL.

SOUND TREATMENT

SOUNDLINE ALL DUCTWORK TO A DISTANCE OF 15'-0" FROM FAN DISCHARGE AND INLET. SOUNDLINING SHALL BE 1" THICK MAT FACED FIBERGLASS DUCTLINER. DUCT SIZES INDICATED SHALL BE INSIDE CLEAR DIMENSIONS. WHERE ACOUSTICAL LINING IS SPECIFIED THERMAL INSULATION IS NOT REQUIRED.

INSULATION - DUCTWORK

CONCEALED DUCTWORK: ALL AIR CONDITIONED SUPPLY DUCTWORK SHALL BE INSULATED WITH 1 1/2" THICK PINK WRAP TYPE IV OENSBORNING FIBERGLASS AS STANDARD. TAPE AND SEAL ALL SEAMS PER MANUFACTURER'S RECOMMENDATIONS. RETURN AIR DUCTWORK IN HUNG CEILING SHALL NOT BE INSULATED. INSULATION & SOUND TREATMENT SHALL CONFORM TO RS-13-1, PAR 305 OF N.Y.C. BUILDING LAWS (FLAME SPREAD 25, SMOKE DEVELOPED 50).

FIRE DAMPERS

FIRE DAMPERS ARE BASED ON AIR BALANCE, MODEL #119 TYPE AL, BL, AND CL. THEY SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S APPROVED INSTALLATION INSTRUCTIONS AND SHALL BE N.Y.C. BOARD OF STANDARDS AND APPEALS (B.S.A.), UNDERWRITERS LABORATORIES (U.L.) APPROVED AND LABELED. DAMPERS SHALL CONFORM TO THE M.T.C. STANDARD DETAILS AND SPECIFICATIONS (POMVA).

PIPING

ARRANGEMENT AND ALIGNMENT OF PIPING

- GROUP PIPING WHEREVER PRACTICAL, INSTALLED IN STRAIGHT PARALLEL LINES ARRANGED AND ALIGNED IN A UNIFORM DIRECT MANNER. ALL CHANGES IN DIRECTION OF PIPING SHALL BE MADE WITH FITTINGS.
- PIPE LINES SHALL BE GUIDED, SUPPORTED AND ANCHORED IN SUCH A MANNER THAT PIPE LINES WILL NOT CREEP, SAG OR BUCKLE.
- INSTALL PIPING CAREFULLY ALLOWING FOR PROPER ALIGNMENT, SLOPE AND EXPANSION.
- RUN HORIZONTAL PIPING AT RIGHT ANGLES AND NOT DIAGONALLY ACROSS ROOMS AND/OR OTHER PIPING.
- VENT AUXILIARY COOLING WATER PIPING AT ALL HIGH POINTS.

TEST REQUIREMENTS (AUX. COOLING WATER)

OPERATING PRESSURE	150 PSIG
OPERATING TEMPERATURE	80F - 100F
HYDROSTATIC TEST PRESSURE	1.5 X OPERATING PRESSURE
DURATION OF TEST	2 HOURS

ISOLATE EQUIPMENT, CONTROLS INSTRUMENTS AND VALVES FROM THE PIPING SYSTEM DURING HYDROSTATIC TESTS.

PIPING & FITTINGS

SYSTEM	PIPE	FITTINGS
AUX. COOLING WATER	BLACK STEEL PIPE, CONFORMING TO ASTM A106 SCHEDULE 40 GRADE B	2-1/2" CAST IRON, SCREWED 250 LB. CLASS
AC UNIT CONDENSATE DRAIN	COPPER ASTM B-88 HARD TEMPER TYPE (L)	WROUGHT COPPER SOLDER JOINT 5 ANGI B16.18

SIMILAR AND EQUAL TO 250 LB. CLASS, HANGERS, BRACKET SEATS, CRIMINAL FIGURE 554, U.S.

2. NIPPLES, 6" LENGTH OR LESS, SHALL BE OF THE SAME MATERIAL AS THE ADJACENT PIPING. CLOSURE SHALL NOT BE USED.

SOLDERED JOINTS

95-5 TITANIUM SOLDER HAVING A MELTING POINT OF 250°F. EXCESS SOLDER SHALL BE REMOVED WHILE HOT WITH A FILET LEFT AT THE FACE.

THERMOMETERS

- THERMOMETERS FOR PIPING SHALL BE OF THE UNIVERSAL, SEPARATE SOCKET, INDUSTRIAL STAINLESS STEEL EXTENSION NECK WELLS.
- THERMOMETER FOR AUXILIARY COOLING WATER SHALL BE OF THE RANGE AND SHALL INCLUDE A MOUNTING AT EITHER END.
- THERMOMETERS SHALL BE AS MANUFACTURED BY ALBERT A. WILCOX INSTRUMENT CO., ASHCROFT OR APPROVED EQUIVALENT.
- TEMPERATURE GAUGES SHALL BE OF THE BOURDON TYPE, 4-1/2" DIAL SIZES. GAUGES SHALL BE CALIBRATED WITH BLACK NUMBERS ON WHITE BACKGROUND. SHALL BE AS MANUFACTURED BY ALBERT A. WILCOX INSTRUMENT CO., ASHCROFT OR APPROVED EQUIVALENT.
- THE PRESSURE RANGE FOR THE AUXILIARY COOLING WATER SHALL BE 0 - 300 PSI AND THE BOURDON TUBE SHALL BE OF THE 1/2" TYPE.

STRAINERS

STRAINERS SHALL BE SIMILAR AND EQUAL TO THOSE MANUFACTURED BY GRINNELL CO. SCREENED "Y" TYPE AND SMALLER SHALL BE 250 LB. NO. 11. THE STRAINERS SHALL BE STAINLESS STEEL. STRAINERS SHALL BE PROVIDED WITH CAPPED BLOWDOWN VALVES.

SLEEVES AND ESCUTCHEONS

EXPOSED PIPING PASSING THROUGH WALLS SHALL BE PROTECTED BY CHROMIUM PLATED CAST BRASS ESCUTCHEONS WITH SCREWS SIMILAR AND EQUAL TO PERMANENT MOUNTING & MANUFACTURED BY GRINNELL CO. OR APPROVED EQUIVALENT. SLEEVES SHALL BE PROVIDED AS PER DETAIL.

PIPE SUPPORTS AND HANGERS

- ALL SUPPORTS AND PARTS SHALL CONFORM TO THE REQUIREMENTS OF THE ANSI CODE FOR PRESSURE-TEMPERATURE DESIGN AND MSS STANDARD PRACTICE SP-58.
- HANGERS SHALL BE MANUFACTURED BY GRINNELL CO., IRON, FEE AND MASON, BEAUMONT CO. OR APPROVED EQUIVALENT.
- PIPE HANGERS, RODS, INSERTS AND CLAMPS SHALL BE APPROVED FOR THEIR RESPECTIVE USES BY LABORATORIES, INC.
- UNLESS OTHERWISE SPECIFICALLY APPROVED, SPACING SHALL BE:

PIPE SIZES	MAX. HANGER SPACING
1/2" to 1"	9 ft. o.c.
1 1/2" to 2 1/2"	9 ft. o.c.

5. ALL FERROUS HANGERS & SUPPORTS SHALL BE PAINTED WITH ONE COAT OF RED LEAD & OIL.

VALVES

TYPE	SIZE	PRESSURE	JENKINS FIG. NO.
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GATE UP TO 1" 125 PSI 47U
GATE UP TO 2" 150 PSI 49U

2. BALANCING VALVES SHALL BE NON-LUBRICATED WITH POSITION INDICATOR, MEMORY STOP, SHALL BE AS MANUFACTURED BY HOMESTEAD APPROVED EQUAL.



CANTOR FITZGERALD SECURITIES CORP.
WORLD TRADE CENTER

ALTERATION TO MUNI ROOM 105
SPECIFICATIONS